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(54) **RECOMBINANT VACCINE AGAINST *CLOSTRIDIUM PERFRINGENS* INFECTION AND EPSILON TOXIN INTOXICATION**

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CPC ***A61K 39/08*** (2013.01); ***C07K 14/33*** (2013.01); *A61K 2039/55566* (2013.01)

(58) **Field of Classification Search**

None

See application file for complete search history.

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(57) **ABSTRACT**

The present invention relates to generation and high level expression of recombinant non-toxic of epsilon toxin of *Clostridium perfringens* as a recombinant vaccine against *Clostridium perfringens* infection and a process for producing the vaccine involving amplifying, cloning, transforming, incubating and purifying the recombinant non-toxic epsilon toxin protein. Thus in this invention, substitution mutation Y71G was executed in recombinant Etx and the recombinant EtxY71G protein was over-expressed in soluble form. Expressed protein was purified near homogeneity by DEAE sepharose anion exchange chromatography with high yield. Potential of rEtxY71G as a vaccine candidate was evaluated and found to be highly specific and immunogenic. The present invention is the first report for high level expression of non toxic rEtxY71G mutant protein of *Clostridium perfringens*. Upto 100 mg/L of highly immunogenic and homogeneous recombinant EtxY71G protein of 31 kDa was produced. Further, the immunization with rEtxY71G gave very high titer and conferred protection against epsilon toxin intoxication.

12 Claims, 11 Drawing Sheets